BIOCHEMICAL OXYGEN DEMAND (BOD)
Standard Method 5210 B (5-day BOD Test)

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Biochemical Oxygen Demand (BOD)

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Biochemical Oxygen Demand (BOD)	4.0 mg/L	Technical: 48 hours from collection; Contract: 12 hours from receipt at laboratory	Cool to 4EC ±2EC

Follow the procedure outlined in Standard Method 5210 B for the analysis of samples for BOD.
Begin sample analysis within six (6) hours of collection. If this is not possible, store samples at 4EC or lower and report the storage temperature and time length of storage with the analytical results for each sample.
Warm stored samples to 20EC prior to analysis.
Follow the procedures outlined in Sections 4e-j of SM 5210 B for sample pretreatment, dilution, incubation, and determination of initial and final dissolved oxygen (DO).

Data Calculations and Reporting Units:

Calculate the sample results according to Section 5 of Standard Method 5210 B. Report sample results in concentration units of milligram per liter (mg/L) of BOD. Report BOD concentrations that are less than or equal to 40 mg/L to 2 significant figures, and BOD concentrations greater than 40 mg/L to 3 significant figures.

For rounding results, adhere to the following rules:

a) If the number following those to be retained is less than 5, round down;
b) If the number following those to be retained is greater than 5, round up; or
c) If the number following the last digit to be retained is equal to 5, round down if the digit is even, or round up if the digit is odd.

All records of analysis and calculations must be legible and sufficient to recalculate all sample concentrations and QC results. Include an example calculation in the data package.

Table 2. Summary of Internal Quality Control Procedures for Biochemical Oxygen Demand (BOD) by Standard Method 5210 B

QC Element	Frequency	Acceptance Criteria	Corrective Action
Unseeded Dilution Water	One per Batch or SDG[a] (1 per 20 samples minimum)	DO uptake < 0.2 mg/L (preferably < 0.1 mg/L)	1. Obtain satisfactory water by improving purification or from another source.
Standard Check Solution	One per Batch or SDG (1 per 20 samples minimum)	[b] Laboratory control limits	1. Re-evaluate control limits and investigate source of problem.
Seed Control Standard	One per batch or SDG (1 per 20 samples minimum)	DO uptake between 0.6 and 1.0 mg/L	1. Identify and document problem. 2. Reanalyze affected samples.
Duplicate Sample (DUP)	One per batch or SDG (1 per 20 samples minimum)	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"

[a] SDG - Sample Delivery Group - each case of field samples received; or each 20 field samples within a case; or each 14 calendar day period during which field samples in a case are received.

[b] Perform a minimum of 25 glucose-glutamic acid checks, calculate mean and standard deviation. Use mean ±3 standard deviations as control limits.